UNM NSF ECURE FACULTY FELLOWSHIPS

REQUEST FOR PARTICIPATION

ECURE Fellowships are available to faculty at all UNM campuses

Please complete the online participation-application form by 5:00 pm, March 25, 2022.

https://esurvey.unm.edu/opinio/s?s=146203

What is ECURE?

ECURE (Expanding Course-Based Undergraduate Research Experiences) is an NSF-funded grant designed to leverage UNM's research mission to enrich undergraduate education in STEM general education[1] and portal[2] courses. ECURE is a program of the General Education Initiative within the Provost Challenge for Excellence and Equity. It is led and supported by Academic Affairs, the Office of the Vice President for Research, the Division of Equity and Inclusion, and the Office of Student Affairs. ECURE is based on the following key concepts:

- Engaging students in undergraduate research (UGR) experiences will positively impact their science literacy, science identity, and research self-efficacy, as well as their likelihood to persist and graduate at UNM.
- Engaging students in UGR in general education and portal courses will allow us to serve more students than co-curricular programming alone, and will help students connect course content to professional, community and research applications.
- Engagement in undergraduate research can be offered at varying levels of research immersion. These levels range from students learning about research without actually conducting research to students implementing all stages of their own authentic research projects (see descriptions of the levels below). All levels of early research immersion are useful to achieving desired student outcomes described above, and to creating more effective and diverse pathways to more advanced co-curricular research engagements within their majors.

To this end, ECURE will support instructors in incorporating UGR components into their general education and portal sections, and will study the impact of these enriched engagements on student perceptions and behaviors.

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[1] Defined as a course that counts towards student general education requirements in a STEM field. For a list of STEM fields, please see: http://stem.unm.edu/about-stcc/what-is-stem.html

[2] Defined as the first one or two courses students typically complete once they begin their major courses, generally at the 200 or 300 level.

The UNM Academic Affairs General Education Teaching Fellows UGR Group has developed an expanded course-based undergraduate research experiences (CURE) framework. This framework conceptualizes three distinct levels of student immersion in UGR, all of which will have positive impact on students (see figure below). We believe that each of the three levels of student research immersion will have significant positive stand-alone benefits, but ECURE funding will allow us to measure these impacts across immersion levels and academic disciplines using the same student outcomes.
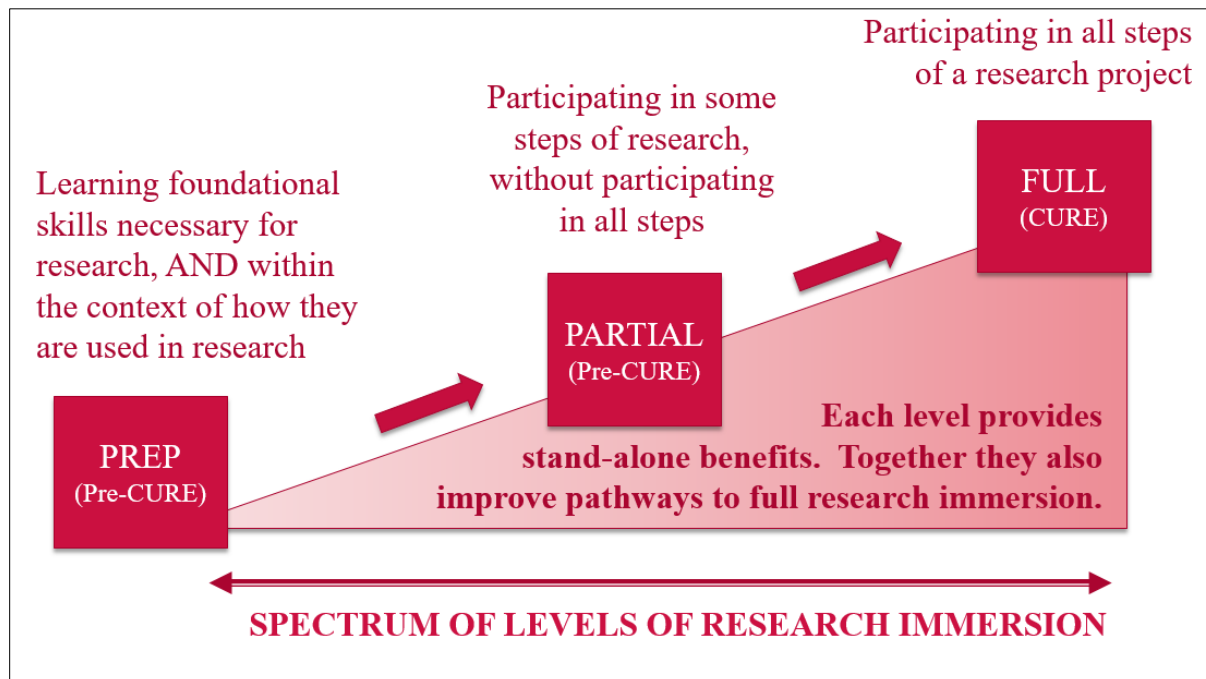
Preparatory Immersion (PREP).   In the ECURE Framework, PREP is defined as teaching students how research is conducted (including explaining the connection of foundational skills to research processes), but without actual engagement in research. PREP can be taught in either lecture or active learning environments. **Throughout the course of the semester, students in PREP sections will participate in at least ten separate activities, assignments or focused lectures addressing research skills or research-applied foundational skills during the course of an academic term.** Examples include teaching students to differentiate between correlation and causation, exploring the value of peer-based literature compared to Wikipedia, or learning how an important course concept is used in solving real-world problems.

Partial Immersion (PARTIAL).   In the E-CURE framework, PARTIAL is defined as engaging students in selected components of research, without engaging in all of the essential elements of full CUREs. An example of PARTIAL might an include a class where students are provided a research problem by the instructor (rather than identifying one themselves), are provided a summary of existing knowledge (rather than conducting their own lit reviews), are provided with a research method (rather than selecting their own), are required to collect & analyze data individually, and report their findings to the instructor in a research journal (rather than sharing with research peers). **Throughout the course of the semester, students in PARTIAL sections will engage in at least two research steps, where students ask or answer questions to which the answers are unknown.** These research steps will be defined by the instructor, as

appropriate for their academic discipline. One example of research steps from the University of Houston includes: Define the problem, Review the literature, Form problem statement, Select research design, Carryout the research, Interpret research, Report the research, and Repeat. We define "answers are unknown" as the divergent experiences, with multiple possible correct results, rather than convergent experiences, with single or limited correct results. The instructor may know which results are most likely, but not which results are pre-determined if the research is conducted correctly.

Full Immersion (FULL). FULL experiences fit the traditional definition of CUREs, where students participate in authentic research experiences. ***In FULL experiences, students participate in all stages of the research project.*** These projects should not be individual or independent projects. They should be group-based projects, where each student participates in all of the stages. In general education and portal courses, these projects will most often be small research projects. As with PARTIAL, the research steps will be defined by the instructor, as appropriate for their academic discipline. In addition, to some extent the research projects should include all of the elements in the following table.

Elements of Undergraduate Research[3]	
Scientific practices	Uses generally accepted scientific practices to answer research questions
Discovery	Generates new knowledge, insights or understanding (***focuses on questions where the answers are unknown***).
Broadly relevant or important work	Findings are meaningful and important beyond the classroom
Collaboration	Involves teams of researchers working together
Iteration	Builds upon previous research and current knowledge

What are the types of ECURE fellowships, and how are they compensated?

ECURE fellowships are open to faculty (including PTIs and Lecturers) from all UNM campuses.

For 2022-22, ECURE will support 25 Implementation Fellows and 12 Exploratory Fellows.

Implementation Fellows will develop and implement ONE of the three levels of immersion in at least one section of a STEM general education or portal course in the Fall 2022, Spring 2023 and/or Summer 2023. Each Implementation Fellow will receive a $4,000 summer stipend.

Exploratory Fellows will explore the use of the ECURE framework in their courses by observing their peers implement projects, but will not commit to an implementation themselves. Exploratory Fellows will be encouraged to apply as Implementation Fellows next year, if they feel this is an appropriate framework for their course(s). Exploratory Fellows will receive a $1,000 summer stipend.

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[3] Auchincloss, L. C., Laursen, S. L., Branchaw, J. L., Eagan, K., Graham, M., Hanauer, D. I., Lawrie, G., McLinn, C. M., Pelaez, N., & Rowland, S. (2014). Assessment of Course-based Undergraduate Research Experiences: A Meeting Report. CBE-Life Sciences Education, 13(1), 29-40.

Implementation Fellows and Exploratory Fellows commit to attend the virtual ECURE Summer Institute. This institute includes four synchronous Zoom-based meetings, along with regular asynchronous engagements throughout the summer (for instance, discussion boards). The four synchronous sessions will be held on the following dates:

- Monday, May 23rd 1 to 4pm
- Tuesday, June 21st 1 to 4pm
- Monday, July 11th 1 to 4pm
- Monday, August 8th 1 to 4pm

All other engagements during the Summer Institute will be asynchronous, and can be arranged to meet your individual schedule. This professional development program will introduce you to the ECURE framework and assessment mechanisms, as well as active learning strategies and culturally inclusive instruction.

Implementation Fellows and Exploratory Fellows commit to meeting monthly with the ECURE community of practice. These meetings may be more or less frequent as determined by the participants, and will be held by Zoom.

Implementation Fellows commit to incorporating their selected level of immersion (PREP, PARTIAL or FULL) in their section(s) of STEM general education or portal course(s) during the Fall 2022, Spring 2023 or Summer 2023.

Implementation Fellows commit to assigning their students to complete an ECURE pre and post assessment survey. This survey will not take longer than 30 minutes to complete, and can be assigned as an in-class activity or as out-of-class homework. We request that instructors provide incentive for students to complete the survey, possibly through points towards the final grade or through extra credit points.

Implementation Fellows commit to allowing classroom observations by members of the community of practice, and ECURE staff/researchers. These observations will be at the discretion of the instructors, and will be scheduled based on instructor preferences.

Exploratory Fellows commit to observing at least three classroom sessions in Fall 2022, Spring 2023 and/or Summer 2023.

Implementation and Exploratory Fellows commit to completing an instructor survey at the conclusion of Summer 2032. This survey will not take longer than 25 minutes to complete.

Implementation Fellows commit to completing a two-page summary of their project at the end of Summer 2023. A template will be provided for the report.

OPTIONAL: If Implementation Fellows would like to share their curriculum modules with peers at UNM and other institutions, we will provide a module template for doing so. We will post these modules on the ECURE website, and will distribute to other non-UNM sites as appropriate.

Who do I contact if I have questions?

While the ECURE model is flexible to meet the needs of instructors in different course types (lectures, labs, active classrooms) in different academic disciplines, it is likely you have questions about how this framework would fit with your plans and goals for your own sections. We would love to chat with you about your ideas, so please contact Tim Schroeder (ECURE Director) at timschroeder@unm.edu to arrange a virtual chat via Zoom.